

## FORAGE SUITABILITY GROUP

Clayey, Dry-Mod. Saline “LRU K” (AWC 3" - 6") (EC 4 - 8 mmhos/cm)

15 - 19" ppt & 90 - 120 Freeze Free Days

**FSG No.: GO58BK005WY**

**Major Land Resource Area (MLRA) :** 58B – Northern Rolling High Plains, Southern Part

### Physiographic Features

This area is considered the Northern Rolling High Plains, Southern Part with a little over one-third of the area being federally owned. The remainder of the area is privately owned. The elevation ranges from 2,952 to 5,905 feet (900 to 1,800 meters) increasing gradually from North to South. These dissected plains are underlain by shale and sandstone. The majority of this area is in grasses and shrubs. Slopes are mostly gently rolling to steep, with wide belts of steeply sloping badlands bordering a few of the river valleys. In some places, flat-topped, steep-sided buttes arise sharply above the general level of the plains. Gently sloping deep soils make up approximately 4 to 5 per cent of the area and are in dry cropland. Narrow strips of land along the Tongue, Powder, and Platte Rivers and some of their tributaries are irrigated.

### Climatic Features

Annual precipitation ranges from 12 - 19 inches per year with isolated areas of precipitation upwards of 20 inches per year. Maximum precipitation occurs in the spring and early autumn. Precipitation in the winter is snow. Relative humidity is low. Winds are estimated to have higher velocities in the spring and lower velocities in the summer.

Temperatures are subject to wide ranges, both seasonal and day to night. The high elevation of the plains and the dry air in this area permit large amounts of incoming and outgoing radiation, giving rise to warm days and cool nights. Late spring and early fall freezes are common, because of the cold air outbreaks from Canada, high elevation and rapid nighttime cooling. The cold air outbreaks from Canada generally do not last long, as their path is generally southeasterly, then easterly in these latitudes. Sunshine is quite abundant with few days during the year without some sunshine.

The low and erratic precipitation is the principal source of water for agriculture. Water for livestock is usually stored in small reservoirs, but supplies are inadequate for significant irrigation. Irrigation water in quantity is available only along the major rivers and some of their larger tributaries. Ground water is scarce in most of the area.

This is in Land Resource Area “K”. The precipitation in this LRU is 15 – 19 inches and has a freeze free period of 90 to 120 days.

There is a wide variation in freeze free days and precipitation in this MLRA. Please be sure and visit with the local field office for site specific climatic information that is available in the Field Office Technical Guide, Section I, Climatic Data, <http://www.nrcs.usda.gov/technical/efotg/> or refer to the National Water and Climate Center web page at <http://www.wcc.nrcs.usda.gov>.

### Soil Interpretations

This group consists of deep, moderately fine textured soils. These soils have a water holding capacity (AWC) of 3 to 6 inches in 60 inches of root depth. The soils have an Electrical Conductivity (EC) of 4 to 8 mmhos/cm. The permeability class ranges from slow to moderately slow.

The soil survey maps were completed for the purposes of developing plans for tracts of land and can not be used to determine the soils on or the suitability of a specific site. Consequently, small areas of significantly different soils are not identified on the maps and may occur in any map unit.

Refer to Appendix A, Forage Suitability Group Rules in Section II, of the Field Office Technical Guide, Pastureland and Hayland Interpretations for the parameters used in grouping the soils.

### **Soil Map Unit List**

For a complete listing of soil components and what Forage Suitability Group the soil is in, refer to Appendix B, Section II of the Field Office Technical Guide, Pastureland and Hayland Interpretations.

### **Adapted Species List**

Refer to Appendix C, Adapted Species for Forage Suitability Groups in Section II of the Field Office Technical Guide, Pastureland and Hayland Interpretations. Additional information concerning plant characteristics of a number of the listed species as well as individual cultivars of many of those species can be accessed on the web at <http://www.plants.usda.gov>.

### **Production Estimates**

Production estimates are based on management intensity (fertility regime, irrigation water management, harvest timing, etc.) and should be considered as estimates only. The estimates should only be used for making general management recommendations. On site production information should always be used for making detailed planning and management recommendations when available.

The high forage production estimates listed below are based on dense, vigorous stands of climatically adapted, superior performing cultivars. They are properly fertilized for high yields, and pest infestations are kept below economic thresholds. Mechanical harvests are managed to maintain stand life by cutting at appropriate stages of maturity and harvest intervals. If grazed, optimum beginning and ending grazing heights are adhered to. Adequate time is allowed for plant recovery before entering winter dormancy under both uses.

The production estimates listed below represent total annual above ground plant production on an air-dry-matter basis. Production on pastures in many instances is species dependent and depends if the pasture is a single species pasture or a mixture of grass species. To convert the information below to AUM's (Animal Unit Months), multiply the pounds per acre by 35 per cent (harvest efficiency) and then divide by 790 lbs./year/AU (animal Unit) (example: assume 2,800 pounds per acre:  $2,800 \times .35 \div 790 = 1\frac{1}{4}$  AUM's).

**Irrigation:** The expected production for grass would be from 1,500 to 2,000 pounds per acre. The expected production for legumes would range from 4 to 6 tons per acre.

**Dryland:** The expected production for grass would be from 400 to 700 pounds per acre. Legumes are not suited.

### **Forage Growth Curves**

**Growth Curve Number:** WY0012

**Growth Curve Name:** Cool Season Grass

**Growth Curve Description:** Dryland (15 – 19” precipitation)

**Percent Production by Month**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	35	40	10	5	5	0	0	0

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**Growth Curve Number:** WY0013

**Growth Curve Name:** Cool Season Grass

**Growth Curve Description:** Irrigated (15 – 19” precipitation)

**Percent Production by Month**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	40	20	10	5	0	0	0

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**Growth Curve Number:** WY0008  
**Growth Curve Name:** Legumes  
**Growth Curve Description:** Irrigated (15 – 19” precipitation)

**Percent Production by Month**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	25	20	20	20	10	0	0	0

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**Growth Curve Number:** WY0009  
**Growth Curve Name:** Legumes/Cool Season Grass  
**Growth Curve Description:** Irrigated (15 – 19” precipitation)

**Percent Production by Month**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	30	20	15	15	10	0	0	0

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**Growth Curve Number:** WY0014  
**Growth Curve Name:** Legumes  
**Growth Curve Description:** Dryland 1 cutting (15 – 19” precipitation)

**Percent Production by Month**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	25	25	15	20	10	0	0	0

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**Growth Curve Number:** WY0015  
**Growth Curve Name:** Legumes  
**Growth Curve Description:** Dryland 2 cuttings (15 – 19” precipitation)

**Percent Production by Month**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	25	15	25	10	0	0	0

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**Growth Curve Number:** WY0004  
**Growth Curve Name:** Legumes/Cool Season Grass  
**Growth Curve Description:** Dryland (15 – 19” precipitation)

**Percent Production by Month**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	15	25	30	15	5	10	0	0	0

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**Growth Curve Number:** WY0005  
**Growth Curve Name:** Warm Season Grass  
**Growth Curve Description:** Dryland (15 – 19” precipitation)

**Percent Production by Month**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0		10	40	35	15		0	0	0

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## Management

The relationship between soils, vegetation and climate on any given site is historically driven by the ability of the plants to grow and change as conditions warrant and has allowed various species to express themselves naturally. Under agronomic conditions, production-enhancing practices have altered the original limits of the biomass production. The modification of growth factors, customized selection of species and wise use of a variety of management practices have the potential to produce yields and quality far superior to those found in the native state.

These soils when in forage management system should see organic matter at a steady or a slowly climbing state. If erosion from either wind or water is a concern, the current erosion prediction tool should be used to ensure that the erosion concern is addressed properly. Refer to the pasture and hayland planting standard or the forage harvest standard in the Field Office Technical Guide, Section IV for further management information.

Soil salinity problems can result from dryland saline seeps (caused by a perched water table resulting from clay hardpans or shale subsoil), improper drainage, or water management on irrigated soils, or cultivation of naturally saline soils. Soil salinity is strongly linked to water movement through the soil profile. When sub-soil moisture containing salts moves upwards and evaporates, salts are precipitated at or near the soil surface. The solution to salinity problems lies in the prevention of upward salt movement; this requires such actions as utilization of existing soil moisture, the prevention of additional water moving into the system and/or site drainage. Drainage by tiling or ditching is generally not advised because of the potential for both surface and groundwater contamination. Changes in cultural practices can be effective. The use of deep-rooted perennial crops will also retard or prevent moisture movement into effected areas. On irrigated sites, irrigation water management is critical. Irrigation timing, duration, and the disposal of wastewater all influence the movement of salts.

## FSG Documentation

### Data References:

Agriculture Handbook 296 - Land Resource Regions and Major Land Resource Areas  
Natural Resources Conservation Service, National Water and Climate Center (NWCC)  
National Soil Survey Center, National Soil Information System (NASIS)  
National Range and Pasture Handbook  
Natural Resources Conservation Service, Field Office Technical Guide (FOTG)  
Various Agriculture Research Service (ARS), Cooperative Extension Service (CES), and Natural Resources Conservation Service (NRCS) information on plant trials for adaptation and production.  
"Dryland Pastures in Montana and Wyoming" Species and Cultivars, Seeding Techniques and Grazing Management, Montana State University, EB19

### State Correlation:

Not Applicable:

### Forage Suitability Group Approval:

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